CLAIMS

1. A method for applying a hybrid coating to a substrate, which coating comprises an inorganic and an organic component and which inorganic component comprises nanoparticles, wherein precursors for these components are activated in one or more plasma sources for plasma activated deposition of a chemical vapor phase and wherein said activated precursors are combined before they are deposited on the substrate from the chemical vapor phase for forming the coating.

2. A method according to claim 1, wherein precursors for said organic and inorganic component are activated in two or more separate plasma sources for plasma activated deposition of a chemical vapor phase.

3. A method according to claim 2, wherein one of the two activated precursors passes the plasma for activation of the other precursor, whereafter said activated precursors are combined.

4. A method according to claim 3, wherein the activated inorganic precursor passes the plasma for activation of the organic precursor.

5. A method according to claim 3, wherein the activated organic precursor passes the plasma for activation of the inorganic precursor.

6. A method according to any one of the preceding claims, wherein the inorganic component is generated in a high electron density high-frequency plasma.

7. A method according to claim 6, wherein the high electron density high-frequency plasma is pulsed.

8. A method according to any one of the preceding claims, wherein the organic component is generated in a low electron density high-frequency plasma.

9. A method according to claim 8, wherein the low electron density high-frequency plasma is pulsed.

10. A method according to any one of the preceding claims, wherein the precursor for the inorganic component comprises metal-carbon, metal-hydrogen, metal-nitrogen, metal-halide, and/or metal-oxygen bonds.

11. A method according to claim 9, wherein the precursor for the inorganic component comprises an organometal compound, a metal organic compound, metal alkoxyde, metal carboxylate, or metal-β-diketonate.

12. A method according to claim 10 or 11, wherein the metal comprises aluminum, titanium, zirconium, molybdenum, cesium, tin and/or platinum.

13. A method according to any one of the preceding claims, wherein the precursor for the inorganic component comprises silicon-carbon, silicon-hydrogen, silicon-nitrogen, silicon-halide, and/or silicon-oxygen bonds.

14. A method according to claim 13, wherein the precursor for the inorganic component comprises an organosilicon compound, silicon alkoxyde, siloxane, silane, silazane, silicon carboxylate, or silicon-β-diketonate.

15. A method according to any one of the preceding claims, wherein the precursor for the organic component comprises alkanes, alkynes, alkenes, arenes, and optionally wholly or partly (cyclo)alkyl-, aryl-, aralkyl-, allyl-, methoxy-, halogen-, hydroxy-, amino-, nitro-, or cyano-substituted derivatives thereof.

16. A method according to any one of claims 1-14, wherein the precursor for the organic component comprises short chain alkanes, acrylate, styrene or carbon-fluorine compounds.

17. A method according to any one of the preceding claims 1-14, wherein the precursor for the organic component comprises an organosilicon compound, organometal compound, metal organic compound or p-xylylene, and/or optionally functionalized compounds derived therefrom.

18. A method according to any one of the preceding claims, wherein the separate activation sources are situated in a reactor in which a pressure of between 0.01 and 1000 mbara prevails.

19. A method according to any one of the preceding claims, wherein the separate activation sources are situated in a reactor in which a pressure of 0.1 to 50 mbara prevails.

20. A method according to any one of the preceding claims, wherein the plasmas are formed by bringing a mixture of precursor material, argon gas and optionally oxygen to electrical discharge.

21. A method according to any one of claims 7-20, wherein to the low electron density plasma, also vapor coming from the high electron density plasma is supplied.

22. A method according to any one of claims 7-20, wherein to the high electron density plasma, also vapor coming from the low electron density plasma is supplied.

23. A hybrid coating, obtainable by a method according to any one of claims 1-22.

24. A product comprising a hybrid coating according to claim 23.

25. A device for applying a hybrid coating of an inorganic and an organic component to a substrate through plasma activated deposition of a chemical vapor phase, which comprises a reactor space provided with a carrier for a substrate, and at least two separate plasma sources for forming the inorganic and the organic component, wherein the separate plasma sources are situated in the processing direction, such that the two activated precursors are combined before being deposited on the substrate.

26. A device according to claim 25, wherein the separate plasma sources are situated in the processing direction, such that one of the two activated precursors passes the plasma for activation of the other precursor before being deposited on the substrate.

27. A device according to claim 25 or 26, wherein one of the plasma sources is situated in the reactor space.

28. A device according to any one of claims 25-27, wherein one of the plasma sources forms a direct plasma.

29. A device according to any one of claims 25-28, wherein one of the plasma sources is a plasma source for generating a high electron density high-frequency plasma and another plasma source is a plasma source for generating a low electron density high-frequency plasma.

30. A device according to claim 29, wherein the plasma sources are pulsating.

31. A device according to any one of claims 26-30, which further comprises transport means for a vapor phase.